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0s	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
p	preliminary
r	revised
x	suppressed to meet the confidentiality requirements of the *Statistics Act*
E	use with caution
F	too unreliable to be published
*	significantly different from reference category ($p < 0.05$)

The physical and mental health of Inuit children of teenage mothers

by Anne Guèvremont and Dafna Kohen

Released online November 21, 2012

Abstract

Background

The physical and mental health of children of teenage mothers differs from that of children of older mothers. Compared with the overall population of Canada, Inuit experience first-time pregnancy earlier. However, little population-based research has examined health outcomes for Inuit children of women who began childbearing in their teens.

Data and methods

This study uses data from the 2006 Aboriginal Children's Survey to compare physical and mental health outcomes of 2- to 5-year-old Inuit children of teenage and older mothers.

Results

The physical and mental health outcomes of Inuit children differed depending on whether their mother had been a teenager or aged 25 or older when she began childbearing. Although some differences were explained by socio-economic factors, others, namely, ear infections, dental problems and hyperactivity/inattention, were not.

Interpretation

Further research is needed to determine what underlies differences in the mental and physical health of Inuit children of teenage and older mothers.

Keywords

Aboriginal, child behaviour, child rearing, maternal age, parenting, socio-economic factors.

Authors

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The demographic characteristics of Inuit youth in Canada differ from those of non-Inuit youth. Children aged 0 to 4 make up a larger percentage of the Inuit population (12%) than they do of the non-Aboriginal population (5%).[1] At ages 15 to 19, the fertility rate of Inuit females substantially exceeds national rates. In 2009, 20% of births in Nunavut (where 85% of the population self-identified as Inuit in 2006) were to 15- to 19-year-olds, compared with 4% of births in Canada overall.[2]

Few studies have focused specifically on Inuit children of teenage mothers. Archibald[3] interviewed 53 Inuit women and youth on their views of adolescent pregnancy. While respondents acknowledged the cultural and social importance of children in Inuit society, they also recognized that the circumstances of Inuit women who have children at an early age can be challenging.[3] In a study based on census data, Garner, Senécal, and Guimond[4] found that Inuit women who first gave birth when they were teenagers had lower family income and were more likely to live in homes that were overcrowded and in need of major repairs, compared with Inuit women who began childbearing at older ages.

Canadian and American research has found that children of teenage mothers in general tend to have less favourable health and behavioural outcomes than do children of older mothers.[5-8] However, children of teenage mothers are also more likely to live in low-income and lone-parent families, and to have mothers who are not secondary school graduates.[9-11] Some studies have found that when these factors are taken into account, the differences between the outcomes of children of teenage and older mothers are not significantly different.[12,13]

For Inuit children, however, having a teenage mother might not be associated with negative health outcomes. In Inuit communities, teenage pregnancy may be perceived differently than it is in non-Inuit communities.[14,15]

Examining the health of Inuit children is important because, compared with children in Canada overall, they have been shown to be at a risk for a range of physical health conditions, such as ear infections,[15] respiratory infections,[16] and dental problems.[17] Less research has pertained to their mental health, particularly in the preschool years.

During the preschool period, the foundations are laid for emotional well-being and social skills.[18,19] Children who show a disadvantage in behavioural outcomes at this time may be at risk for future behaviour problems and poor social skills, peer relations, school adjustment, and academic achievement.[20-25]

Based on the results of the 2006 Aboriginal Children's Survey (ACS),[26] this study compares physical health and behavioural outcomes for 2- to 5-year-old Inuit children of teenage (began childbearing at ages 12 to 19) and older (began childbearing at age 25 or older) mothers. Because teenage mothers (and their children) are more likely to live in disadvantaged socio-economic circumstances,[4] it is important to consider the role of these conditions in the association between maternal age at first birth and child outcomes.[7,27] Such information makes it possible to determine whether differences in socio-economic conditions explain differences in physical and mental health between Inuit children of teenage and older mothers.

Methods

Data source

The 2006 Aboriginal Children's Survey (ACS)[26] collected information on the early development of Aboriginal children and the socio-economic conditions in which they are growing and learning. The ACS provides extensive data about Inuit, Métis, and off-reserve First Nations children younger than age 6 in urban, rural, and northern areas across Canada.

This study focuses on 2- to 5-year-olds, because ACS data on behavioural outcomes are available only for children aged 2 or older. Inuit children were identified for this analysis based on the question, "Is _____ an Aboriginal person, that is, North American Indian, Métis, or Inuk?" If the parent reported that the child was Inuk (responding Inuk only, or Inuk and another Aboriginal identity), the child was included in this study. Four out of five mothers (83%) of 2- to 5-year-old Inuk children self-identified as Inuk. Close to nine in ten (86%) Inuit children of teenage mothers had mothers who reported Inuit identity, compared with 66% of children of mothers who started childbearing at age 25 or older. Exploratory analyses excluding Inuit children with non-Inuit mothers yielded similar results (available from authors upon request).

Inuit children were included in the study only if the person who responded to the ACS was their birth mother, which was true for 61% of Inuit 2- to 5-year-olds. Children were excluded if the respondent was not their birth mother, because the age of the child's mother (and whether she had given birth as a teenager) was unknown. Of the 39% of cases that were not included, the respondent was the birth father (17%), an adoptive parent (12%), a grandparent (4%), or other family member or non-family person (5%). The sample used for this analysis consisted of 774 Inuit children aged 2 to 5, weighted to represent a population of 3,211.

Compared with Inuit children excluded from this study, those who were included were less likely to have ACS respondents with more than secondary graduation (20% versus 27%) and who were aged 25 or older (74% versus 93%), and more likely to be in households in the lowest income quartile (27% versus 20%) and in lone-parent families (29% versus 19%).

The likelihood of living in Inuit Nunangat did not differ between children who were included or excluded. The 2006 Census counted about 7,000 Inuit children younger than age 6, 84% of whom lived in one of four regions that comprise Inuit Nunangat, which means "Inuit homeland" in the Inuit language. These regions are Nunatsiavut in northern Labrador, Nunavik in northern Quebec, the territory of Nunavut, and the Inuvialuit region in the Northwest Territories.

Age of mother at first birth

The age of the child's mother when she began childbearing was calculated as the difference between her current age and the age of the oldest sibling living in the household (or the age of the survey child if he/she was the oldest). If the difference was less than 20 years, she was considered a teenage mother.[4,8] If the difference was greater than or equal to 25 years, she was considered an "older" mother. If the difference was less than 12 years, the child was excluded from this study. Results for mothers who were aged 20 to 24 when they had their first child are also shown in the tables, but are not discussed in the text.

The age of the mother when she started having children does not reflect her age at the time of the ACS. About half of the children (51%) in the study with mothers who began childbearing as teenagers had mothers who were aged 25 or older at the time of the ACS interview. The age of the mother when she began having children, rather than her age when she gave birth to the survey child, was used for this study because factors that led her to begin childbearing during adolescence and the experience of motherhood as a teenager, would likely influence children who were born later.[28,29]

Physical health

Four measures of the child's physical health, based on maternal report, were examined: 1) excellent/very good versus good/fair/ poor health; 2) presence of a chronic condition (asthma, chronic bronchitis, tuberculosis, diabetes, hypoglycemia, heart disease, kidney disease, epilepsy, cerebral palsy, Down's Syndrome, spina bifida, attention deficit/hyperactivy disorder, anxiety/depression, fetal alcohol spectrum disorder, autism, hearing impairment, visual impairment, speech or language difficulties, iron deficiency anaemia, any other long term condition or disease); 3) ever

had an ear infection; and 4) ever had dental problems. The ACS sample was too small for the presence of multiple conditions to be examined.

Mental health

Children's behaviours and relationships were assessed in the ACS with the Goodman Strengths and Difficulties Questionnaire (SDQ), a parent-reported instrument consisting of 25 items grouped into five subscales.

The questionnaire and its subscales have been validated for use with First Nations living off reserve, Métis, and Inuit children in the ACS; four of the five subscales are valid for Inuit children (the peer problems subscale was omitted because of low reliability).[30] Similar findings have been reported elsewhere.[31] All questions had three possible responses: not true (score 1), somewhat true (score 2), or certainly true (score 3). Appendix Table A contains the exact wording of all items.

This analysis used the four subscales suggested by Oliver et al.[30]: pro-social behaviour (10 items; for example, how readily the child shares with other children); emotional symptoms (5 items; for example, having many worries and being fearful); conduct problems (10 items; for example, fights with other children); and hyperactivity/inattention (3 items; for example, being easily distracted and unable to stay still for long). If the mother responded to at least 80% of the items on a subscale, the mean score was calculated, with a range of 1 to 3 for each subscale.

Socio-economic variables

Several socio-economic factors were examined to determine their role in explaining differences in outcomes between Inuit children of teenage and older mothers: mother's education (currently in school, not currently in school and not a secondary graduate, or not currently in school and at least secondary graduation); household income quartile (based on the 2006 Census and adjusted for household size); number of people in household (based on the 2006 Census); and family structure (lone-parent or two-parent family). Although children may be living with only one parent, they may have other support in the household such as grandparents or other family or non-family members.

Analysis

Descriptive analyses (percentages and means) were used to describe the socio-economic characteristics and physical and mental health outcomes of Inuit children according to the age of their mother when she began childbearing. Differences between the characteristics of Inuit children of teenage and older mothers were assessed with t-tests. For outcomes that differed for Inuit children of teenage and older mothers, multiple regression was used to examine the association between the age of the mother when she first gave birth and each outcome, while controlling for socio-economic characteristics. Analyses were based on survey data weighted to be representative of the 2006 Census counts of children younger than age 6 in Canada according to different age groups.[26] The bootstrap method was used to account for the complex sampling design used by the survey.[32,33]

Results

About two-fifths (40%) of the Inuit children in this study had mothers who began childbearing as teenagers, which is consistent with other research.[4] The mothers of another 38% first gave birth at ages 20 to 24, and the remaining 22% of children had mothers who started having children at age 25 or older.

Socio-economic circumstances

Compared with Inuit children whose mothers had given birth at age 25 or older, Inuit children with teenage mothers were more likely to have mothers who were still in school or who had left before secondary graduation (Table 1). For example, 15% of Inuit children of teenage mothers had mothers who were still in school, compared with 5% of those whose mothers first gave birth at

Table 1
Percentage distribution of selected characteristics of Inuit children aged 2 to 5, by age of mother at first birth, Canada, 2006

Characteristics	Age of mother at first birth		
	12 to 19 (N=306)†	20 to 24 (N=289)†	25 or older (N=147)†
	%		
Mother's education			
Currently in school	14.8*	10.5*E	5.1E
Not currently in school			
Less than secondary graduation	57.9*	52.8*	41.8
Secondary graduation	14.8	20.1*	10.9E
More than secondary graduation	12.6*E	16.7*	42.2
Family structure			
Married	22.7*	33.1*	45.3
Common-law	45.9	35.0	38.7
Lone parent	31.4*	31.9*	16.0E
Household income quartile			
Low	30.6*	21.7	20.4E
Middle-low	25.3	28.0*	18.2E
Middle-high	24.2	24.8	25.5
High	19.8*	25.5	35.9
Residence			
Does not live in Inuit Nunangat	16.1*	15.9*E	34.2
Lives in Inuit Nunangat	83.9*	84.1*	65.8

† unweighted sample size for each group
* significantly different from children of mothers aged 25 or older at their first birth ($p<0.05$)
E use with caution
Note: The sample is restricted to Inuit children whose birth mothers responded to the survey (61% of Inuit 2- to 5-year-olds).
Source: 2006 Aboriginal Children's Survey.

age 25 or older. As well, Inuit children of teenage mothers were more likely than Inuit children of older mothers to live in lone-parent families (31% versus 16%), and less likely to have married mothers (23% versus 45%) or to live in households in the highest income quartile (20% versus 36%).

Physical health

Inuit children of teenage mothers were less likely to be rated as being in excellent/very good health, compared with Inuit children whose mothers had first given birth at age 25 or older (Table 2). They were also more likely to have had an ear infection and dental problems. However, Inuit children of teenage mothers were no more or less likely than those of older mothers to be reported as having a chronic condition.

When socio-economic factors such as the mothers' education and household income were taken into account, the difference in the likelihood of being in excellent/very good health between Inuit children of teenage and older mothers was not significant (Table 3). However, Inuit children of teenage mothers were still more likely to have had an ear infection and dental problems.

Table 2
Physical health and behavioural outcomes of Inuit children aged 2 to 5, by age of mother at first birth, Canada, 2006

Outcome	Age of mother at first birth		
	12 to 19	20 to 24	25 or older
Physical health (percentage)			
Excellent/Very good health	73.9*	74.1	83.4
Chronic condition	33.4	34.7	36.6
Ever had ear infection	60.6*	46.7	41.9
Ever had dental problem	47.5	43.0*	27.3
Behavioural (mean score (standard deviation))			
Pro-social behaviour	2.62 (0.29)	2.65 (0.29)	2.68 (0.30)
Emotional symptoms	1.41 (0.32)*	1.35 (0.30)	1.29 (0.32)
Conduct problems	1.65 (0.39)	1.63 (0.47)	1.57 (0.52)
Inattention/Hyperactivity	1.75 (0.54)*	1.70 (0.51)*	1.50 (0.47)

* significantly different from children of mothers aged 25 or older at their first birth ($p<0.05$)
Note: The sample is restricted to Inuit children whose birth mothers responded to the survey (61% of Inuit 2- to 5-year-olds).
Source: 2006 Aboriginal Children's Survey.

Table 3
Unadjusted and adjusted odds ratios relating selected characteristics to physical health outcomes among Inuit children aged 2 to 5, Canada, 2006

Characteristics	Excellent/Very good health						Ever had ear infection						Ever had dental problem					
	Unadjusted odds ratio	95% confidence interval		Adjusted odds ratio	95% confidence interval		Unadjusted odds ratio	95% confidence interval		Adjusted odds ratio	95% confidence interval		Unadjusted odds ratio	95% confidence interval		Adjusted odds ratio	95% confidence interval	
		from	to		from	to		from	to		from	to		from	to		from	to
Age of mother at first birth																		
12 to 19	0.57*	0.33	0.96	0.74	0.43	1.27	2.13*	1.35	3.38	2.63*	1.64	4.21	2.61*	1.68	4.05	1.94*	1.24	3.04
20 to 24	0.57*	0.33	0.97	0.62	0.36	1.07	1.22	0.77	1.92	1.42	0.89	2.27	2.12*	1.37	3.29	1.63*	1.05	2.53
25 or older†	1.00	...	...	1.00	...	...	1.00	...	...	1.00	...	...	1.00	...	...	1.00	...	...
Age of child (years)‡	0.99	0.86	1.15	0.96	0.83	1.12	1.02	0.91	1.15	1.03	0.91	1.17	1.44*	1.27	1.63	1.41*	1.23	1.60
Male (versus female)	0.65*	0.46	0.93	0.65*	0.45	0.93	1.06	0.78	1.44	1.06	0.77	1.45	0.86	0.64	1.15	0.82	0.60	1.11
Mother's education																		
Currently in school	...	...	...	0.47*	0.23	0.95	...	...	...	1.02	0.57	1.82	...	...	...	1.05	0.61	1.80
Not currently in school																		
Less than secondary graduation	...	...	...	0.46*	0.30	0.69	...	...	...	0.71	0.49	1.03	...	...	...	1.34	0.93	1.94
Secondary graduation or more†	...	...	...	1.00	...	...	...	...	...	1.00	...	...	...	...	...	1.00	...	...
Lone-parent (versus two-parent) family	...	...	...	0.94	0.65	1.34	...	...	...	0.97	0.68	1.39	...	...	...	1.22	0.84	1.77
Household income ($10,000s)‡	...	...	...	1.07	0.97	1.19	...	...	...	1.06	0.97	1.15	...	...	...	0.98	0.90	1.06
Number of people in household‡	...	...	...	0.99	0.91	1.07	...	...	...	0.94	0.88	1.02	...	...	...	1.06	0.98	1.14
Living in (versus outside) Inuit Nunangat	...	...	...	0.59	0.29	1.19	...	...	...	0.82	0.48	1.42	...	...	...	1.83*	1.01	3.34

† reference category
‡ continuous variable
* significantly different from reference category ($p<0.05$)
... not applicable
Note: Adjusted odds ratio controls for other characteristics in model.
Source: 2006 Aboriginal Children's Survey.

Table 4
Unadjusted and adjusted regression coefficients relating selected characteristics to emotional symptoms and inattention/hyperactivity among Inuit children aged 2 to 5, Canada, 2006

	Emotional symptoms				Inattention/Hyperactivity			
Characteristics	Unadjusted coefficient	Standard error	Adjusted coefficient	Standard error	Unadjusted coefficient	Standard error	Adjusted coefficient	Standard error
Age of mother at first birth								
12 to 19	0.12*	0.03	0.06	0.03	0.24*	0.06	0.21*	0.06
20 to 24	0.05	0.03	0.02	0.03	0.20*	0.06	0.20*	0.06
25 or older†	1.00	..	1.00	..	1.00	..	1.00	..
Age of child (years)‡	0.03*	0.01	0.02	0.01	-0.01	0.02	-0.01	0.02
Male (versus female)	-0.05	0.02	-0.05*	0.02	0.12*	0.04	0.12*	0.05
Mother's education								
Currently in school	..	..	0.13*	0.05	..	..	0.10	0.09
Not currently in school								
Less than secondary graduation	..	..	0.06*	0.03	..	..	0.01	0.05
Secondary graduation or more†	..	..	1.00	..	..	..	1.00	..
Lone-parent (versus two-parent) family	..	..	0.10*	0.03	..	..	0.03	0.05
Household income ($10,000s)‡	..	..	-0.02*	0.01	..	..	-0.02*	0.01
Number of people in household‡	..	..	0.01*	0.01	..	..	0.02	0.01
Living in (versus outside) Inuit Nunangat	..	..	0.04	0.03	..	..	-0.10	0.07

† reference category
‡ continuous variable
* significantly different from reference category ($p<0.05$)
.. not applicable
Note: Adjusted coefficient controls for other characteristics in model.
Source: 2006 Aboriginal Children's Survey

Mental health

Mean scores for pro-social behaviour and conduct problems did not differ between the two groups of Inuit children, but those with teenage mothers had higher mean scores for emotional symptoms and inattention/hyperactivity (Table 2). When socio-economic differences were taken into account, mean scores for Inuit children of teenage and older mothers did not differ for emotional symptoms, although differences in inattention-hyperactivity scores persisted (Table 4).

Discussion

This study used data from the population-based 2006 Aboriginal Children's Survey to compare physical and mental health outcomes for Inuit children of teenage and older mothers. The two groups of Inuit children did not differ in terms of the presence of chronic conditions or mean scores for pro-social behaviour or conduct problems. And while Inuit children with teenage mothers were less likely to be reported to be in excellent/very good health, this association was not significant when socio-economic factors were taken into account. However, even when the influence of socio-economic differences was considered, Inuit children of teenage mothers were more likely than Inuit children with older mothers to have had an ear infection and dental problems. Ear infections have been associated with hearing loss and speech and language problems,[34] and dental problems have been associated with pain, infection, and behaviour problems.[35]

Mean scores for emotional symptoms and inattention/hyperactivity were higher for Inuit children of teenage versus older mothers, although there were no differences in emotional symptoms when socio-economic factors were taken into account. Inattention/hyperactivity, particularly in the preschool years, has been negatively associated with early literacy skills and later school achievement.[23,24]

Strengths and limitations

The strengths of this study include a population-based sample that was nationally representative of Inuit children living in Canada, examination of both physical and mental health outcomes, information on the mother's age when she began childbearing, and inclusion of socio-economic factors. All outcomes were based on maternal reports rather than measures created for or assessed by non-Inuit individuals.

The study has several limitations. Maternal age at first birth was calculated according to the age of the oldest sibling in the household. It is possible that this was a step-, foster, or adopted child, and not a birth child, which could result in an incorrect determination of the mother's age when she began childbearing. As well, it is possible that the oldest sibling might not be living in the household (for example, he or she might be living with another relative), which would also lead to an inaccurate calculation of the mother's age when she first gave birth.

What is already known on this subject?

- Pregnancy rates among Inuit teenagers are relatively high, compared with rates among teenagers in the Canadian population overall.
- Inuit women who begin childbearing as teenagers generally have less favourable socio-economic conditions than do Inuit women who first give birth at older ages.
- Canadian and American research has found that, in general, children of teenage mothers are more likely to have poor physical and mental health, compared with children of older mothers.
- Little population-based research has examined outcomes for Inuit children of teenage mothers.

What does this study add?

- Preschool-aged Inuit children of teenage mothers were less likely to be in very good/excellent health, more likely to have ever had an ear infection or dental problems, and had higher scores for emotional problems and inattention-hyperactivity, compared with preschool-aged Inuit children of older mothers.
- Some differences—being in very good/excellent health and emotional problems—were explained by socio-economic factors, but other differences were not—ear infection, dental problems, and inattention-hyperactivity.

Children were included in this study if the survey respondent was their birth mother, which was true for 61% of Inuit children. For the Inuit children of other respondents, the age of their biological mother at first birth was not available from the ACS, and this group differed in their socio-economic conditions.

The physical and mental health outcomes were based on maternal reports. Mothers could be influenced by how they believe they should respond, by their experiences, or by subjective views of their child.[36] Thus, differences between Inuit children of teenage and older mothers may reflect mothers' reporting patterns rather than true differences in child physical or mental health. Nonetheless, maternal reports are a mother's expert perceptions (versus those of an unfamiliar observer), and were provided by both younger and older mothers.

This analysis could not explore many other factors that may have contributed to the differences in physical and mental health outcomes of Inuit children, such as parenting behaviours, cultural activity participation, and the availability of social and other supports including father and extended family involvement.[29,37-39]

Conclusion

Analysis of data from the 2006 Aboriginal Children's Survey shows that physical and mental health outcomes for Inuit children of women who were teenagers when they began childbearing differed from outcomes for Inuit children whose mothers first gave birth at age 25 or older. Some differences were explained by socio-economic variables, but others were not. These differences may be related to factors that were not explored in this study. Additional qualitative and quantitative research would increase the understanding of what underlies the differences in outcomes between the Inuit children of teenage and older mothers. ■

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Appendix

Table A
Wording of mental health items

Pro-social behaviour
Considerate of other peoples' feelings
Shares readily with other children, for example, toys, treats, pencils
Helpful if someone is hurt, upset or feeling ill
Kind to younger children
Often offers to help others including parents, teachers, other children
Generally well-behaved, usually does what adults request
Has at least one good friend
Generally liked by other children
Can stop and think things out before acting
Good attention span, sees work through to the end
Emotional symptoms
Often complains of headaches, stomachaches or sickness
Many worries or often seems worried
Often unhappy, depressed or tearful
Nervous or clingy in new situations, easily loses confidence
Many fears, easily scared
Conduct problems
Often loses temper
Often fights with other children or bullies them
Often argumentative with adults
Can be spiteful to others
Hyperactivity/Inattention
Restless, overactive, cannot stay still for long
Constantly fidgeting or squirming
Easily distracted, concentration wanders